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The recent discoveries by Prof. Poey have much increased the number of representative species. The *Haliperca* of the West Indies are represented by one Japanese species, (*H. hirundinaceus*). The other Serraninæ have been already enumerated by Dr. Günther. The *Elastoma oculatum* of the Caribbean Sea is represented by a form so closely allied that the distinguished authors of the Fauna Japonica were unable, after a critical comparison, to discover any difference. *Verilus* of Poey is allied to *Elastoma* and *Etelis*, and is perhaps also represented by *Caprodon* (T. & S.) in Japan. The species of the genus *Scombrops*, T. & S. has only two species, one of which is Japanese and the other Cuban; the nearest relation of the genus is also a West Indian, the *Sphyrænops Bairdianus* (Poey.) *Emmelichthys* has equally Japanese and West Indian species. The peculiar *Priacanthus nipponius* (Cuv. et Val.) and *Myriopristis Japonicus* (Cuv. et Val.) are most nearly allied to West Indian and North American fishes—the *Priacanthus altus* (Gill) and *Myriopristis trachypoma* (Günther). Finally, the species recently described as *Hollardia Hollardi* by M. Poey, is closely related to a Japanese fish, the *Triacanthodes anomalus*, Blkr. The forms enumerated are very peculiar and distinct ones, and have no near allies in other seas. Many other genera of more universal distribution or with less characteristic species, which are represented by allied forms in the two seas might be added. Sufficient has been said to indicate that the law which has been enunciated by botanists relating to the similarity of the plants of Eastern Asia and Eastern America, may be extended within more restricted limits, to the inhabitants of the sea as well as to those of the land; for the invertebrated animals,—the crustaceans, the mollusks and the radiates,—to a greater or less extent, are subject to the same rule as the fishes.

Catalogue of the FISHES of Lower California, in the Smithsonian Institution,
collected by Mr. J. Xantus.

PART II.

BY THEODORE GILL.

In this paper are continued the descriptions of the fishes collected at Cape St. Lucas, by Mr. John Xantus. The sequence of the families is not entirely in accordance with their natural affinities.

Family *TEUTHYDOIDÆ* (Cuv.)

Genus *PRIONURUS* C. et V.

PRIONURUS PUNCTATUS Gill.

The greatest height equals two-fifths of the total length (·40,) the head forms more than a fourth (·27.) The length of the snout much exceeds half of the head's length (·15,) and is a half greater than the diameter of the orbit (·10;) it is produced and its upper profile very obliquely incurved. There are on each side of the upper jaw eight teeth, and in the lower jaw six. The tail has three median laminae, the anterior of which are conic, and the last bifid, and one smaller one above and below at the base of the caudal.

D. VIII. 26. A. III. 22. (V. I. 5.)

The color is whitish gray, spotted with black on the head, body, dorsal, and anal fins; the caudal peduncle and fin, pectoral and ventral fins are immaculate.

Many specimens of this species were obtained at Cape St. Lucas. It widely differs from the previously known species by its spotted body; in other

[April,

respects it is most nearly allied to the *Prionurus laticlavus* Val., from the Gallapagos Islands.

Family CHÆTODONTIDÆ.

Subfamily CHÆTODONTINÆ.

Genus SAROTHRODUS Gill.

SAROTHRODUS NIGRIROSTRIS Gill.

The body is elevated, the height being nearly equal to three-fifths of the extreme length. The snout is little produced, and shorter than the diameter of the eye. The pectorals equal the head's length, and are scarcely longer than the ventrals. The lateral line is slowly curved upward as far as the vertical of the fourth soft dorsal ray, and is there nearly parallel with the back, from which it is mostly separated by an interval equal to the width of the interorbital area.

D. XII. 24. A. III. 20.

Scales lat. line 44.

The ground color is apparently light and uniform. The head is whitish; the muzzle has a blackish band; there is a transverse interorbital band emarginated behind and much narrower than the orbit. A band between the dorsal fin and the interorbital area descends to the temples and is bordered by whitish. Another obliquely crosses the dorsal fin, caudal peduncle and near the margin of the anal, the anterior margin of which extends from the base of the anterior soft rays to the axilla of the anal fin; the band is bordered by whitish. The caudal, the produced portion of the dorsal, margin of the anal, and all the pectoral and ventral fins appear to have been uniformly light.

This species is allied to *Sarothrodus ulietensis* (*Chatodon ulietensis* Btkr.) *S. robustus* (*C. robustus* Gthr.) *S. humeralis* (*C. humeralis* Gthr.) *S. gracilis*, (*C. gracilis* Gthr.) and *S. maculo-cinctus* Gill; but is readily distinguished by the above diagnosis.

Two specimens, about two inches and a half long, were sent by Mr. Xantus to the Institution; the alcohol having evaporated, both have been dried up.

Genus HOLACANTHUS (Lam.) C. et V.

HOLACANTHUS STRIGATUS Gill.

The greatest height exceeds two-fifths ($\cdot43$) of the length. The length of the head forms almost a quarter ($\cdot24$;) the diameter of the orbit equals a third ($\cdot08$) of that length, and is less than the length of the snout ($=\cdot09$;) and greater than that of the preopercular spine ($\cdot07$.) The margin of the dorsal and anal fins are slightly convergent backwards; the angle of the former is little acuminate, and passes beyond the anterior half of the caudal, the longest rays nearly equalling the head's length; the anal angle is obtuse or slightly rounded. The caudal is scarcely convex, and slightly oblique, its upper angle passing beyond and less blunt than the lower; the length is less than a fifth ($\cdot19$) of the total. The pectoral exceeds a fifth ($\cdot21$) and the ventrals nearly equal a quarter ($\cdot24$) of the total length.

D. XIV. 17. A. III. 16.

The color is dark purplish brown, crossed below the seventh spine by a whitish band attenuated and curved backwards below; four nearly equidistant indistinct vertical bluish lines cross the body between the band and the base of the caudal. The head is girdled with two broader and more distinct bluish bands, one in front of the eyes, and the other in front of the dorsal and behind the eyes. The dorsal and anal have two indistinct lines parallel with the borders, and the posterior margins are also bluish. The pectorals, dorsal and caudal are yellow; the latter alone margined with brown.

1862.]

This species, like the *Pimelepterus*, is related to a species of the Red Sea, the *Holacanthus maculosus* C. et V., but is readily distinguished by the less elevated body and fins, number of rays and details of coloration. It is also related to the *H. formosus* Cast. of Brazil, and more remotely to *H. passer*, Val., of the Gallapagos Islands, and *H. diacanthus*, Gthr., of the Indian Ocean.

Genus POMACANTHODES Gill.

POMACANTHODES ZONIPECTUS Gill.

The form much resembles that of *Pomacanthus*. The greatest height equals three-fifths ($\cdot59$) of the length. The head forms about a quarter ($\cdot26$) and the caudal fin about a sixth ($\cdot17$) of the total length. The diameter of the orbit enters nearly four times ($\cdot726$) in the head's length, the snout two and a half times, ($\cdot10$) and the preopercular spine six times and a half ($\cdot04$.) The dorsal is considerably produced at the sixth ray which passes behind the rounded posterior margin and nearly equals a third ($\cdot31$) of the total length. The anal is simply rounded behind, and the caudal truncated. The pectorals equal a fifth ($\cdot21$) and the ventrals three-tenths ($\cdot30$) of the length. The back behind the nape is gibbous or protuberant.

D. XI. 23—24. A. III. 20.

The color is brownish margined with light on each scale. A very dark brown band girdles the breast behind the ventral and pectoral fins; the dark color is prolonged upwards to the fifth dorsal spine, and merges into the lighter color of the head. The pectorals and caudal are marbled, the other fins nearly uniformly dark.

One specimen eight inches long was collected by Captain Dow, at San Salvador.

PIMELEPTEROIDÆ Gill.

This family may be modified to embrace those fishes with the outline correspondingly developed above and below the median axis of the body, and by scaly fins and compressed teeth, as well as the development of numerous pancreatic caeca. The principal types are the Pimelepterinae, Girellinae, and Scorpinae. Two of those types are represented on the California coast.

Subfamily GIRELLINÆ Gill.

Genus GIRELLA (Gray,) Gthr.

GIRELLA NIGRICANS Gill.

Camarina nigricans Ayres, Proc. California Academy of Natural Sciences, pt. ii. p. 81, fig. 22. Oct. 1861.

Girella nigricans Gill, Proc. Acad. Natural Sciences, vol. xiv. p. 16. 1862.

This species appears to be a true *Girella*, and I had referred it to that genus early in 1850, when hastily examining the species then sent by Mr. Xantus. I have always found fourteen dorsal spines. There is a more or less distinct white spot under the spinous dorsal. If distinct, then it may be named *G. dorsomacula*.

D. XIV. 13. A. III. 11.

The genus *Girella* as limited by Dr. Günther, scarcely appears to be homogeneous. The *Girella simplex*, (*Crenidens simplex* Rich.) has the incisors entire and undivided, and therefore represents a distinct genus to which the name of *Incisidens* may be given.

Subfamily PIMELEPTERINÆ Gthr.

Genus PIMELEPTERUS (Lac.)

This genus as adopted here is intended to embrace only those species with
[April,

nearly uniformly low dorsal and anal fins, and consequently excludes *Pimelepterus tahmel* Rüppell, *P. Dussumieri* C. et V. and *P. raynaldi* C. et V., in which the soft parts of the dorsal and anal fins are much elevated. It is therefore proposed to refer them to a distinct genus under the name of *OPISTHISTIUS*.

The *Pimelepterus waigensis* has been stated by Cuvier and Valenciennes to apparently have five or six pyloric caeca.* In the species of our eastern coast which I have examined, as well as in *T. fuscus* and *Opisthistius tahmel*, they are present in very great number. There is, therefore, an anomalous range of variation for so very closely related species, or appearances have been deceptive to Messrs. Cuvier and Valenciennes. In two specimens of the very closely related *P. analogu* opened by us, the intestines were completely decayed, although the fishes were externally in a fine state of preservation.

The *Pimelepterus levifrons* of Tschudi is not at all related to this genus.

PIMELEPTERUS ANALOGUS Gill.

The greatest height enters 2.6-7 ($\cdot 35$) times in the *extreme* length. The head forms about two-ninths ($\cdot 22$) and equals the length of the caudal; the snout enters three times in that length, and is less than the width of the interorbital area ($\cdot 08\frac{1}{2}$): the median rays of the caudal are half as long as the longest, and rather more than half as long as the head ($\cdot 11\frac{1}{2}$.) The dorsal is highest at its sixth spine, the length of which enters eleven times ($\cdot 09$) in the total, and is twice as great as the last spine; the greatest height of the soft portion equals a quarter of the head's length ($\cdot 05\frac{1}{2}$.) The pectorals and ventrals have the same length, and are contained more than eight times ($\cdot 12$) in the total.

D. XI. 14. A. III. 13. C. 1. I. 7. 6. I. 1. P. 2. 14. V. 1. 5.

The teeth are about twenty-two in number in each jaw. The vertical part in the adult is as long as the heel or horizontal part, and the apex subtriangular.

13
Scales 75 —
20

The color of the adult is grayish on the back, and on the flanks indistinctly longitudinally banded alternately with yellow and grayish or silvery, the former along the middle of the scales, and the latter along the adjoining sides. In the young, large yellowish spots are distributed on the body. The preorbital is silvery. The fins are rather dark.

Nearly related to *Pimelepterus waigensis* (Quoy and Gaimard) and *P. incisor* C. et V., but apparently differing slightly in its proportions.

Family GERREOIDÆ Blkr.

Subfamily GERREINÆ Blkr.

Genus DIAPTERUS (Ranzani.)

DIAPTERUS CALIFORNIENSIS Gill.

The greatest height nearly equals a third ($\cdot 32$) of the *extreme* length; the caudal peduncle is slender and attenuated at the middle. The head forms less than a quarter ($\cdot 22$) of the length; the diameter of the orbit enters two lines and two-thirds ($\cdot 09$) in the head's length, the snout three times and a third. The interorbital area is flattened, and the groove for the posterior processes of the intermaxillary bones is broad, scaleless, semioval between the eyes, and attaining to the vertical of the ends of the maxillary bones; the exposed portions of the latter bones are convex above, semicordate, and twice as long as broad. The lateral line is sigmoidally curved.

* "Le nombre des coecums qui entourent le pylore nous a paru de cinq ou six."

The second and third dorsal spines are nearly equal, angulated at the terminal third (normally?) contained rather more than seven times ($\cdot 13\frac{1}{2}$) in the total length, and nearly twice as long as the last one ($\cdot 07$.) The third anal spine is larger than the second, shorter than the last dorsal one and a quarter ($\cdot 06$) of the head's length. The caudal forms between a third and fourth ($\cdot 29$) of the length, equals the pectorals, and is twice as long as the ventrals.

$\begin{array}{ccc} 1 & 1 & 6 \\ \text{D. IX. } 9 - . & \text{A. III. } 7 - . & \text{Scales } 44 - . \\ 1 & 1 & 13 \end{array}$

The color is silvery with steel blue reflections above; the fins immaculate.

DIAPTERUS GRACILIS Gill.

The greatest height scarcely equals a quarter ($\cdot 23$) of the extreme length; the caudal peduncle is robust and regularly attenuated to the base of its fin. The head forms between a fourth and fifth ($\cdot 22$) of the length; the diameter of the orbit enters nearly three times ($7\cdot 22$) in length of the head, exceeds the length of the snout ($\cdot 06$) and equals the interorbital area. The maxillary groove is linear, naked, and extends beyond the vertical from the anterior third of the pupil. The exposed surface of each maxillary bone is long, oblique and uniformly wide to its anterior third, whence the upper margin is bent forwards. The posterior half of the lateral line is rectilinear and parallel with the dorsal outline.

The second and third dorsal spines are slender, nearly straight, contained eight or nine times ($\cdot 12$, $\cdot 11$) in the total length, and almost four times longer than the last spine ($\cdot 04$). The third anal spine is longer than the second, and equals about a third of the head's length, ($\cdot 06$, $\cdot 06\frac{1}{2}$.) The caudal fin forms more than a fifth ($\cdot 22$) of the length, equals the pectoral, and is nearly twice as long as the ventrals ($\cdot 12$.)

$\begin{array}{ccc} 1 & 1 & 5 \\ \text{D. IX. } 9 - . & \text{A. III. } 7 - . & \text{Scales } 45 - . \\ 1 & 1 & 10 \end{array}$

The color is silvery, and on the back tinged with purplish and with a steel blue reflection. The margin of the spinous dorsal, especially at its angle, is black.

This species is allied to *Diapterus aprion* (*Gerres aprion* C. et V.) *D. macrosoma* (*G. macrosoma* Blkr.) *D. argyreus* (*G. argyreus* C. et V.,) and *D. oblongus* (*G. oblongus* C. et V.,) but is distinguished by the combination of characters indicated in the diagnosis.

Descriptions of two new species of VESPERTILIONIDE, and some remarks on the genus ANTROZOUS.

BY HARRISON ALLEN, M. D.

I have been permitted, by the Smithsonian Institution, to publish the following descriptions from specimens in its collection.

LASIURUS INTERMEDIUS, nob.

Head large, flat and hairy. Snout high, emarginate and of a brown color. Nostrils opening sublaterally. Sides of face moderately inflated. Mouth and lower jaw fringed with short hair. There is a small naked space at mentum. The ears are high, elliptical, pointed and nearly naked; they are strongly convex on their inner border, nearly straight on their outer; the lobe at the base of the outer border is very well developed. The tragus is similar in shape to that of *L. cinereus*, but has a blunter incurved tip; it is slightly haired on facial surface. Eyes diminutive, placed near the ear. Thumb rather small. Feet moderate.

[April,